Video Signal Equipment

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VMD01 Digital Motion Detector

Whenever you need reliable video motion detection, for indoor or outdoor use, the Bosch VMD01 is the unit of choice.
The VMD01 is an intelligent digital motion detector that uses advanced video content analysis to reliably detect moving objects while suppressing unwanted alarms from spurious sources in the image. The unit intelligently adapts to changing lighting and environmental conditions such as rain, snow and leaves blowing in the wind.

The MD01 can easily be configured to select the sensitive areas of the image, the minimum object size and the motion direction that will trigger an alarm, so that it only detects the important moving objects in a scene. A Graphical display allows the sensitive area, size and perspective for objects, and movement direction to be simply drawn on the image. Once movement has been detected, the object causing the alarm is outlined on the screen, the motion tracked on the monitor, and pre and post alarm images are stored. The alarm condition can be signaled by means of a standard relay output and LED on the unit.
The stored alarm images can be replayed on the monitor using the front panel rotary switch or by remote control.

Features

- Intelligent digital video motion detector
- Detects, tracks and stores motion images
- Automatic self-adaptation to changing environmental conditions
- Maximizes detection rate and reduces unwanted alarms
- Stand alone or system integration
- Intuitive graphical interface for fast effective set up

Parts Included

Quant.	Component
1	VMD01

Technical Specifications		
Electrical		
Power Supply		
Type		External plug power adapter VMD-PS90 or integrated in a 19-inch rack VMD-RA90
Operating voltage		5 VDC
Power consumption		6 W
Connection		RJ12 (+5 V to 1.2; GND to 4.6)
Video		
Input		1 x BNC, VMD01-M50: PAL/CCIR, VMD01-M60: NTSC/EIA, 75 Ohm (internal termination), 1 Vss (0.5 – 2.0 Vss)
Output		1 x BNC, VMD01-M50: PAL/CCIR, VMD01-M60: NTSC/EIA, 1 Vss; live images, live images with outlined objects, stored alarm images, GUI for set up
Contacts		
Inputs		Internal pull up to ground; 1.: arm/disarm sensor; 2.: toggle parameter set
Outputs		Open collector, 100 mA, 12 V; 1. object detection; adjustable at peak, perodic peak or as long as object is detected; 2. video signal supervision
Relay		
Output		30 V max., 1.0 A; 1.: system/common failure (break contact); 2.: object detection, until reset (minimal for 1 second)
LED		
Conditions Indicated		1.: (Green) Power on, system failure, 2.: (Red) detector armed, video loss, object detection
Serial Port		
Type		RS232, 115 kBaud max. (for back-up purposes, connection of mouse)
VMD		
Type		Digital image analysis; multi-level changes in illumination, texture and motion; primarily outdoor applications (indoor use acceptable)
Results Display		Superimposed in video-out signal, yellow outline = initial position; red outline = present position; green = trajectory (B/W-lines if B/W signal at video-in)
Alarm Image Storage		
Alarm Images		5 pre-alarm images, 1 alarm image, 10 post-alarm images
VMD results		Super imposed outlines, fade out after 5 seconds
Access		Via rotary switch on front panel or remote controlled (toggle) between live image and image storage; forward and backward stepping
Operation Modes		
1	Reset of alarms	automatic
	Normal operation	live image on video-out;
	Object detection	Super imposed outlines in live image on video-out (last alarm sequence in storage)
2	Reset of alarms	manual
	Normal operation	live image on video-out;

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Electrical	
Object detection	Super imposed outlines in live image on video-out (first, not reset alarm sequence in storage)
3 Reset of alarms	Manual
Normal operation	live image on video-out
Object detection:	automatic switchover to the alarm image storage / first alarm image with superimposed outlines on video-out (first, not reset alarm sequence in storage),
Security	
Passcode	Five (5) digits
Video Signal -	Signal loss, bad signal-to-noise ratio, camera
Supervision	blinded, insufficient scene illumination
Compliance	
Emissions & Safety	EN 50081-1, EN 50130-4, EN50130-5, EN 60950, FCC, UR
Mounting Possibilities	
Desk top (stand alone or as stack), wall or ceiling mounted (use VMD-WM), 19 inch rack mounted (use VMD-RA90 or VMD-RA00)	

Mechanical	
Dimensions (H x W x D)	110 x 48 x 207 mm (4,3 x 1,88 x 8.1 inch)
Weight	0.5 kg (without mouse & power supply)

Environmental	
Operating temperature	0°C to 45°C (32°F to 113°F)
Humidity in operation	8% to 80% relative, non condensing
Accessories included	
15pin D-sub plug, 4 rubber feet for desk top mount, 4 locking springs for stack mount	
Type number	**Description**
VMD-PS90	Power supply (required if using as single stand-alone unit) 100 – 240 VAC / 5 VDC, max. 2,4 A. cord 2,0 m, 4x 0.6 with RJ11 plug(+5 V to 1.2; GND to 4.6).
	four (4) different adapters included for UK, US, Europe and AUS
Dimensions (H x W x D)	appr. 85 x 50 x 32 mm (depth without contacts).
VMD-SM	Serial mouse (required for set-up)
VMD-RA90	19-inch rack mount enclosure with power supply for up to eight VMD01s, 3VU, depth: 378 mm (including eight bracket sets for VMD01 mounting)
Power supply:	primary 110 – 230 VAC, Euro and US power cord (1.5 m), secondary 8x5 VDC, 8x 2A (including cable set)
VMD-RA00	Like VMDRA90, but without power supply
VMD-RADC	Set of four front panel covers for one slot of the 19-inch rack
VMD-WM	Wall mount bracket for one stand-alone unit,
Dimensions (H x W x D)	165 x 205 x 10 mm (6.6 x 8.05 x 0.39 inch)
Weight	0.4 kg.

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LTC 5231 & LTC 5234 Series

The LTC 5231 Series and LTC 5234 Series are video distribution amplifiers. They provide video outputs identical to the video input for use with other video equipment.

The LTC 5231 Series are single-channel video distribution amplifiers. They provide four (4) video outputs identical to a single video input for use with other video equipment. A front panel LED is provided to indicate when the amplifier is receiving video. In the event of loss of video, the LTC 5231 Series amplifiers provide a relay contact closure output to signal this occurrence. The LTC 5234 Series are 4-channel video distribution amplifiers. They provide four distribution amplifiers each having one input and three outputs. Each of the four amplifiers provides three (3) video outputs identical to a single video input for use with other video equipment. Inputs have selectable termination permitting looping of the video signal. This feature allows a single video signal to be distributed to as many as 12 devices when all four distribution amplifiers are used. A front panel LED is provided for each distribution amplifier to indicate when the amplifier is receiving video. Each of the four channels of the LTC 5234 Series also include a relay contact closure output to signal video loss.

These units are supplied as desktop units; rack mount kits are available for rack mounting.

Features

- Video Presence Indicators
- Video Loss Contact Closure
- No User Adjustments
- Easy Installation
- Optional Rack Mounting
- Color Compatible

Technical Specifications

Electrical

	LTC 5231 Series Single-Channel		LTC 5234 Series Four-Channel	
Model No.	/50	/60	/60	/50
Rated Voltage	230 VAC 50/60 Hz	120 VAC 50/60 Hz	120 VAC 50/60 Hz	230 VAC 50/60 Hz
Voltage Range	198 to 264	105 to 130		198 to 264
Power at Rated Voltage	5 W		6 W	
Video Inputs	One (1)		Four (4)	
Signal Range	0.5 Vp-p to 2.0 Vp-p			
Video Outputs	Four (4) isolated, 75 Ohm.		Twelve (12) 75 Ohm.	
Video Gain	Unity.			
Signal-to-Noise	65 dB typical.			
Bandwidth -3 dB Point	20 MHz typical		25 MHz typical	
Differential Gain	0.5% typical.			
Differential Phase	0.6 degrees typical.		1.2 degrees typical.	
Video Loss Output	Relay contact pair.		4 Relay contact pair.	
Rating	1 ampere at 40 volts AC / DC maximum.			
Indicators				
Power on LED	Green			
video presence LED	Green			
Connectors	BNC (5).		BNC (16).	

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Mechanical	
Construction	Steel chassis, sheet metal cover & plastic bezel.
Finish	Charcoal.
Dimensions (W x H x D)	223 x 280 x 40 mm (8.77 x 11 x 1.59 inch).
Weight	
LTC 5231 series	2 kg, (4.5 lb)
LTC 5234 series	3 Kg, (6.5lb)

Environmental	
OperatingTemperature	0°C to 50°C (32°F to 122°F).
Humidity	10% to 80% relative, non condensing
Electromagnetic Compatibility	
EMC Requirements	CE Immunity, CE Emission Class B, FCC Class B,ICES-003.
Safety:	CE, UL, cUL.
Options	
LTC 9101/00 Rack Kit	For mounting one or two units in an EIA 19-inch rack
Height	1 standard rack unit
Width	1 standard rack unit

Ordering Information
Model & Description
LTC5231/60
Distribution amplifier, 1 input, 4 output, 115 V 60 Hz
LTC5231/50
Distribution amplifier, 1 input, 4 output, 230 V 50 Hz
LTC5234/60
Distribution amplifier, 4 input, 12 output (3 per input), 115 V 60 Hz
LTC5234/50
Distribution amplifier, 4 input, 12 output (3 per input), 230 V, 50 Hz

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Digital Motion Detectors Indoor

The LTC 2210 Series video motion detectors utilize edge detection with digital tracing technology. Patented circuitry provides reliable security surveillance protection.
These economical, full featured single channel detectors provide flexible operation to maximize performance and minimize false alarms.

Features

- Designed for Indoor Detection
- User Customized Selectable Zones With 12 Sensitivity Settings
- Motion "Tracers"
- On-Screen Programming in Multiple Languages
- Auto-Terminating Looping Inputs
- Remote Arm Input

Functions

Eight fully adjustable detection zones make these units versatile and adaptable to nearly any indoor surveillance situation.

Microprocessor based on-screen setup menus allow easy adjustment of the detection areas. For ease of installation, on-screen menus can be viewed in any of six languages - English, French, German, Spanish, Dutch, or Italian.
Other controls include manual or auto reset, on/off tracer display, and alarm bypass. LEDs indicate alarm ready, alarm activation, and power on.

Upon detection of motion, the LTC 2210 Series units react with an audio beeper and a flashing LED alerting the operator; alerted cameras are called up on-screen (when used with a Sequential Switcher); contacts close for operation of master alarm or VCR operation; and tracers display detected motion.

Sensitivity settings can be adjusted for optimum performance under a variety of conditions. By adjusting the sensitivity and percentage movement settings appropriately,
the LTC 2210 Series can effectively discriminate between a variety of background scenes and desired alarms.

Alarm outputs are available on a 15 pin connector at the rear of the unit. In addition, this connector provides an input which when active will arm the unit.

These units are available in 120 VAC or 230 VAC models, single looping video input, NTSC or PAL color compatibility, desk top or 1/2-rack mount versions, and a coordinated design which integrates well with other Bosch switcher products.

Parts Included

Quant.	Component
1	LTC 2210 (50/60)

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Technical Specifications

Electrical

Model No.	Rated Voltage	Voltage Range	Power at Rated Voltage
LTC2210/60	120 VAC, 50 / 60 Hz	105 to 130	4 W
LTC2210/50	230 VAC, 50 / 60 Hz	195.5 to 253	4 W

Video Inputs:	One (1) looping.
Range:	0.5 Vp-p to 2.0 Vp-p.
Impedance:	Automatically switching 75 ohm terminated or high impedance looping.
Video Outputs	One (1).
Video Gain	Unity.
Bandwidth (-3 dB point)	12 MHz typical.
Differential Gain	3% typical.
Differential Phase	3° typical.

Alarm Outputs

Open collector and/or normally open contact closure. The relay contacts are rated at 1.0 A at 40V AC/DC and a resistive load of 10 VA maximum.

Controls

ALM CLR/ESC Key

Clears an alarm. Cancels beeper, blinking alarm LED, and contact closure. Unit remains in the pre-alarm state (reset and arm are not changed). When programming the system, this button can be used to exit from the programming menus.

ALARM LED

On when armed, blinks when alarm is triggered.

SETUP/ENTER Key

Pressing SETUP/ENTER places the on-screen programming menus on the video monitor. This key is also used to access sub-menus during programming.

Direction Keys

These keys are used to navigate through the programming options. They are also used to define the detection zones.

Detection Zones

Using the arrow keys, detection zones can be drawn anywhere over the full active video for PAL or NTSC. Minimum detection size is 15% H x 15% V (2% of screen area). Maximum size is the entire active video. Detection zones are created on a 64 element (H) by30 element (V) grid for NTSC and on a 64 element (H) by 36 element (V) for PAL.

Indicators

POWER on LED (Green).

ALARM LED (Red).

Cable (Included) Cable with 15-pin connector on one end.

Mechanical

Finish	Charcoal
Dimensions (W x H x D)	223 x 280 x 40 mm (8.77 x 11.0 x1.59 inch)
Weight	2 kg, (4.5 lb)

Evironmental

Operating Temperature	0°C to +50°C (32°F to +122°F)
Storage Temperature	-40°C to +60°C (-40°F to +140°F)
Humidity	10% to 80% relative, non condensing
Vibration	3g swept sine wave, 15Hz to 2000Hz.
Shock	50 g, 11 ms, 1/2 sine.
Electromagnetic Compatibility	
EMC Requirements	CE Immunity, CE Emission Class B, FCC Class B, ICES-003.
Safety	CE, UL, cUL.

Ordering Information

Model & Description

LTC2210/60

Single channel motion detector, 120 VAC, 60 Hz

LTC2210/50

Single channel motion detector, 230 VAC, 50 Hz

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Digital Motion Detectors Outdoor

The LTC 2211 Series and LTC 2212 Series are high sensitivity Digital Motion Detectors. Their ability to ignore environmental changes and camera vibration make them ideal for use outdoors as well as indoors. These detectors minimize false alarms via image processing algorithms, which analyze movement, instead of simple detection.

The LTC 2211 Series has four camera inputs while the LTC 2212 Series has eight camera inputs. They are designed for stand-alone usage, or in conjunction with a switcher/controller system. All include two monitor outputs. The main output is used for system setup, alarm call-up, and system information monitoring. The second bridging output sequences between cameras.

Setup is simple, via on-screen menus at the main monitor, and control is easily accomplished using the front panel controls. The installation menu screens are viewable in six languages - English, French, German, Spanish, Dutch, or Italian.

The LTC 2211/60 and LTC 2212/60 feature 1200 detection points per camera; the LTC 2211/50 and the LTC 2212/50 feature 1120 separate detection points per camera. All models provide directional motion sensing.

Direction sensitivity in each zone can be set to up, down, left, or right. The size of each zone may be adjusted to accommodate varying applications. Each unit features special circuitry to minimize the effects of camera vibration, changes in cloud cover, and extraneous activity such as precipitation and leaf movement.

Four sets of system setup parameters may be stored and automatically recalled at predetermined times. User defined password control prevents unauthorized access to setup parameters.

Upon alarm, the LTC 2211 Series and LTC 2212 Series provide on-screen indications to identify the area of intrusion. External connections provide individual camera alarm outputs, plus one output that is common to all cameras. A selectable audible tone activates to alert the operator of alarm conditions, including loss of video. Individual camera titling with time/date is also provided.

These units can be rack mounted; the coordinated design allows integration with other Bosch switcher products.

Features

- Designed for Outdoor Detection
- User Customized Selectable Zones
- Direction Sensing and Target Speed Settings
- On-screen Programming in Multiple Languages
- Auto-terminating Looping Inputs
- Timed or Manual Selection of Four Pre-programmed Setup Parameters

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Technical Specifications

Electrical

4 Channel Models	LTC 2211/60	LTC 2211/50
Rated Voltage	120 VAC, 60 Hz	230 VAC, 50 Hz
Voltage Range	105 to 130	195.5 to 253
Power at rated Voltage	10 W	10 W
8 Channel Models	**LTC 2212/60**	**LTC 2212/50**
Rated Voltage	120 VAC, 60 Hz	230 VAC, 50 Hz
Voltage Range	105 to 130	195.5 to 253
Power at rated Voltage	10 W	10 W
Detection Analysis	System algorithms are used to pinpoint actual scene motion and help eliminate false alarms. On-screen menu programming.	
Video Inputs		
LTC 2211 Series	Four looping; 8 BNC	
LTC 2212 Series	Eight looping; 16 BNC	
Range	0.5 Vp-p to 2.0 Vp-p	
Impedance	Automatically switching 75 Ohm terminated or high impedance looping	
Video Outputs	75 Ohm	
Video Out	Two; BNC	
MON A	Setup, Call-up, or Alarm Call-up	
MON B	Sequence, Call-up	
Sensitivity	100 levels, selectable per zone, time programmable	
Alarm Outputs	Normally open relay contact closure; one contact closure per camera; one common contact closure via a 25-pin D-connector. Relay contacts are rated at0.5 A at 40 V AC/DC; resistive load 10 VA maximum Color coded alarm cable provided	
Alarm Setup Input	One setup input, used to change motion detector setups remotely	
Serial Printer Port	9-pin D-Connector	
AC Power Cord	3-wire, grounded plug	
Cable (Included)	25-pin D-Connector to 9-pin Connector (break-outs for alarm outputs & serial printer)	

Mechanical

Finish	Charcoal
Dimensions (W x D x H)	223 x 362 x 40 mm (8.77 x 14.25 x 1.59 inch)
Weight	2.6 kg (5.7 lb)

Environmental

Operating Temperature	0°C to +50°C (32°F to +122°F)
Storage Temperature	-40°C to +60°C (-40°F to +140°F)
Humidity	10% to 80% relative, non condensing
Vibration	3 g swept sine wave, 15 Hz to 2000 Hz
Shock	50 g, 11 ms, 1/2 sine
Product Regulatory Compliance	
Electromagnetic Compatibility (EMC)	
	Complies with FCC Part 15, ICES-003 and CE regulations
Product Safety:	Complies with CE regulations, UL, CSA, EN and IEC Standards
Options	
LTC 9101/00 Rack Kit	For mounting one or two units in an EIA 19-inch rack
	Height: One standard rack unit
	Width: One standard rack unit
Controls	
ALM CLR/ESC Key	
ALARM LED	
	SETUP/ENTER Key
	RUN Key
	MON B Key
Detection Zones	Maximum size is the entire active video NTSC: 40 element(H) by 30 element(V) grid PAL: 40 element(H) by 28 element(V) grid

Ordering Information

Model & Description
LTC 2211/60
4-channel digital motion detector, indoor/outdoor, 115 V, 60 Hz
LTC 2211/50
4-channel digital motion detector, indoor/outdoor, 220 V, 50 Hz
LTC 2212/60
8-channel digital motion detector, indoor/outdoor, 115 V, 60 Hz
LTC 2212/50
8-channel digital motion detector, indoor/outdoor, 220 V, 50 Hz

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